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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,538	01/16/2004	Gordan G. Greenlee	END920030141US1	5583

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EXAMINER

MIRZA, ADNAN M

ART UNIT	PAPER NUMBER
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2445

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/758,538	Applicant(s) GREENLEE ET AL.	
	Examiner ADNAN M. MIRZA	Art Unit 2445	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watt (U.S. 7,213,065) and further in view of Bruckert et al (U.S. 2002/0049859).

1. As per claims 1,18,24 Watt disclosed a method for load balancing servers, comprising the steps of. allocating a plurality of servers among a plurality of virtual clusters; monitoring the plurality of virtual clusters for workload capacity (col. 4, lines 36-56); and reassigning at least one server from one of the plurality of virtual clusters to another of the plurality of virtual clusters based on workload capacity in order to reallocate system resources (col. 2, lines 34-47).

However Watt did not disclose in detail, “removing at least one of the plurality of servers from the virtual cluster when at least one of the plurality of servers is burdened; creating a new virtual cluster comprising only the removed at least one of the plurality of servers; and returning the removed at least one of the plurality of servers back to the virtual cluster when the at least one of the plurality of servers is unburdened.

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In the same field of endeavor Bruckert disclosed, "It is possible to build a new cluster using this method by re-assigning addresses to all the end nodes that are joined in the new cluster. This implementation requires simple extension of the cluster node topology. However, the reassignment of cluster Ids impacts traffic in progress because communication links are disabled during reassignment of cluster Ids. Hence cluster Ids reassignment is intrusive ongoing communications and causes system down time (Page. 4, Paragraph. 0040).

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to have incorporated that it is possible to build a new cluster using this method by re-assigning addresses to all the end nodes that are joined in the new cluster. This implementation requires simple extension of the cluster node topology. However, the reassignment of cluster Ids impacts traffic in progress because communication links are disabled during reassignment of cluster Ids. Hence cluster Ids reassignment is intrusive ongoing communications and causes system down time as taught by Bruckert in the method and system of Watt to reduce latency by balancing the load while modifying the address of the clusters and adding new ones.

2. As per claims 2,19,25 Watt-Bruckert disclosed further comprising the steps of: monitoring performance of the plurality of servers; and sending a report in response to workload at one of the plurality of servers exceeding a pre-determined threshold so that routing of further requests to the one of the plurality of servers is altered (col. 15, table. 2).

3. As per claims 3,21 Watt-Bruckert disclosed further comprising the step of removing the one of the plurality of servers from an associated virtual cluster and adding the one of the plurality of servers back into the associated virtual cluster in response to workload falling below the pre-determined threshold (col. 15, lines 15-28).

4. As per claims 4,27 claims Watt-Bruckert disclosed wherein the sending a report sends a report to a network dispatcher and the network dispatcher performs the routing (col. 7, lines 37-47).

5. As per claims 5,28 claims Watt-Bruckert disclosed further comprising the steps of: determining that one of the plurality of servers is overburdened based on statistics; and reducing workload to the one of the plurality of servers if the statistics are above a threshold (col. 15, lines 15-28).

6. As per claims 6,29 Watt-Bruckert disclosed wherein the reducing step includes at least one of removing the one of a plurality of servers from one of the plurality of virtual clusters and limiting further requests from being routed to the one of a plurality of servers (col. 4, lines 36-56).

7. As per claims 7,30 Watt-Bruckert disclosed wherein the reducing step includes reassigning the one of a plurality of servers to another one of the plurality of virtual clusters (col.

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2, lines 34-47).

8. As per claims 8,31 Watt-Bruckert disclosed wherein at least one of the plurality of servers is assigned to more than one of the plurality of virtual clusters (col. 16, lines 28-35).

9. As per claims 9,22,32 Watt-Bruckert disclosed wherein the predetermined criteria includes at least one of requester identity, requested application, time of day, day of week, and performance statistics (col. 16, lines 59-67).

10. As per claims 10,33 Watt-Bruckert disclosed wherein the requester identity is an Internet address (col. 3, lines 1-5).

11. As per claims 11,34 Watt-Bruckert disclosed wherein the performance statistics include at least one of central processing unit (CPU) performance statistics, memory statistics, connection counts, throughput statistics, and response time statistics (col. 18, lines 34-46).

12. As per claims 12,35 Watt-Bruckert disclosed wherein the routing step includes selecting one of the plurality of virtual clusters for routing based on at least one of a requester's identity and a requested application (col. 16, lines 59-67).

13. As per claims 13,23,36 Watt-Bruckert disclosed further including selecting one server from the one of the plurality of virtual clusters for routing based on statistics (col. 16, lines 28-

35).

14. As per claims 14,37 Watt-Bruckert disclosed wherein the selecting is based on performance statistics (col. 2, lines 32-47).

15. As per claims 15,38 Watt-Bruckert disclosed wherein at least one of the plurality of servers is at least one of a lightweight directory access protocol (LDAP) server and a web application server (col. 2, lines 58-67).

16. As per claims 16,39 Watt-Bruckert disclosed wherein the routing uses rules based routing (col. 3, lines 45-50).

17. As per claims 17,20,26,40 Watt-Bruckert disclosed further comprising the steps of reassigning one of the plurality of servers from one of the plurality of virtual clusters to another one of the plurality of virtual clusters, wherein the one of the plurality of virtual clusters has a workload below a threshold and the another one of the plurality of virtual clusters has a workload above the pre-determined threshold (col. 15, lines 15-28).

18. As per claim 41 Watt-Bruckert disclosed further comprising projecting a rate of routing to each of the plurality of servers (Bruckert, Page. 1, Paragraph. 0010).

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19. As per claim 42 Watt-Bruckert disclosed further comprising adjusting the rate of routing based on a relative degree of overload on at least one of the plurality of servers (Bruckert, Page. 1, Paragraph. 0010).

20. As per claim 43 Watt-Bruckert disclosed further comprising providing early advisories when the rate of routing is projected to overload at least one of the plurality of servers (Bruckert, Page. 5, Paragraph. 0053).

21. As per claim 44 Watt-Bruckert disclosed further comprising determining when the plurality of servers in the virtual cluster are equivalently loaded over a predetermined workload threshold and more capacity is needed (Bruckert, Page. 3, Paragraph. 0029).

22. As per claim 45 Watt-Bruckert disclosed further comprising re-assigning at least one of the plurality of servers when the virtual cluster is above a predetermined cluster capacity rating (Bruckert, Page. 1, Paragraph. 0010).

Response to Arguments

23. Applicant's arguments with respect to claims 1-45 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

24. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Adnan Mirza whose telephone number is (571)-272-3885.

25. The examiner can normally be reached on Monday to Friday during normal business hours. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Cardone can be reached on (571)-272-3933. The fax for this group is (703)-746-7239. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

26. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866)-217-9197 (toll-free).

/A. M. M./
Examiner, Art Unit 2445

/Jason D Cardone/
Supervisory Patent Examiner, Art Unit 2445